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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/481,851	01/14/2000	Rustin W. Allred	TI-29746	6201
23494	7590	12/31/2003	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			CHANG, EDITH M	
			ART UNIT	PAPER NUMBER
			2634	7

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/481,851	ALLRED, RUSTIN W.
Examiner	Art Unit	
Edith M Chang	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 October 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 3,11,12,17,18,21 and 22 is/are allowed.
- 6) Claim(s) 1,2 and 8 is/are rejected.
- 7) Claim(s) 4-7,9,10,13-16,19 and 20 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 October 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.	6) <input type="checkbox"/> Other: _____.

Response to Remarks

1. Applicant's remarks filed October 8, 2003 have been fully considered but they are not persuasive. The rejections of claims 1-2 and 8 are remained.

Remark:

Kaku does not discloses or suggest the presently claimed invention including the data processor that can determine filter parameters using algorithmically defined relationships among discrete center frequency data, discrete bandwidth data and discrete gain data such that the plurality of equalizing filters can be re-characterized by the filter parameters in Claim 1.

Response:

Kaku discloses the data processor (32 Fig. 7) that can determine filter parameters: stated in Abstract, a processor unit carries out filtering process, such as amplitude equalization, delay equalization, Lane equalization, etc. In view of the fact that amplitude equalization process can be achieved by a combination of a high pass filter and a low pass filter and Lane equalization process can be achieved by a filter having an attenuating characteristic which is negative at low frequencies and positive at high frequencies, wherein the relationship among the center frequency, bandwidth, and gain are the inferences of the equalization/filters. The processor performs filtering computation on the basis of the parameters which provide a characteristics of the filters (Abstract). Kaku's invention determines filter parameters (column 2 lines 20-30, 32, 32 Fig.7), wherein the filtering computation is carried out on the basis of parameters in response to information specifying an equalization process to be executed. Lane et al. teaches/specifies explicitly the software/algorith (FIG.2, FIG.7) defined relationships among the discrete center

frequency data (column 1 lines 45-47), discrete bandwidth data (column 1 lines 37-50, column 5 lines 19-30 where the relationship in the algorithm), and gain (column 8 lines 5-10). With Lane et al.'s teaching Kaku can get the benefit of producing an actual filter response that closely corresponds with the desired filter response (column 3 lines 38-42, column 1 lines 50-58). The remark of the translating means refer to the previous response.

Remark:

Kaku does not discloses the translating means for translating a desired bandwidth on a desired peak gain and generating the variable multiplier parameter such that the plurality of digital equalizing filters can be re-characterized with a desired multiplier in Claim 8.

Response:

Kaku has the processor to carry out the equalizing/filtering, where the processor is directed by a software, and the filtering includes the amplitude equalization with highpass and lowpass filters, Lane equalization with different attenuations at different frequency bands, and IIR filters with changing parameters permitting a single IIR filter to operate as a delay, amplitude or Lane equalizer (column 1 Lane 60-column 2 Lane 6). For translating a desired bandwidth on a desired peak gain is what the filters do (Fig.6 and Fig.10 Kaku, FIG.1 and FIG.6 Lane et al.). Lane et al. teaches/specifies explicitly the translating means (FIG.2 & FIG. 7, column 3 lines 45-48 where the hardware system executes the software). With Lane et al.'s teaching the Kaku's processor is the translating means. Kaku uses the means to carry out different filter processes to reduce the amount of computation, the allpass filter can be one of the different filters to generate the variable multiplier parameter such that the plurality of digital equalizing filter can be re-characterized with a desired multiplier, to gain the benefit of the allpass filter that is providing an

improved circuit for an equalizer whose frequency ranges can be adjusted in accordance with the predetermined parameters (specification page 2 lines 22-25).

Remark:

Lane does not discloses or suggest the presently claimed invention including the data processor that can determine filter parameters using algorithmically defined relationships among the discrete center frequency data, discrete bandwidth data, and discrete gain data such that the plurality of equalizing filters can be recharacterized by the filter parameters in Claim 1, albeit defined as the translating means for translating the desired bandwidth and the desired peak gain and generating variable multiplier parameter such that the plurality of digital equalizing filters can be re-characterized in Claim 8.

Response:

Kaku discloses the data processor that can determine filter parameters which provide a characteristics of the filters, and perform filtering computation on the basis of the parameters, where the filter process includes amplitude equalization, delay equalization, Lane equalization, etc. The relationships among the center frequency, bandwidth, and gain are the inferences of the equalization/filtering. Lane et al. teaches/specifies explicitly the software/algorithm (FIG.2, FIG.7) defined relationships among the discrete center frequency data (column 1 lines 45-47), discrete bandwidth data (column 1 lines 37-50, column 5 lines 19-30 where the relationship in the algorithm), and gain (column 8 lines 5-10). With Lane et al.'s teaching Kaku can get the benefit of producing an actual filter response that closely corresponds with the desired filter response (column 3 lines 38-42, column 1 lines 50-58). The remark of the translating means refer to the previous response.

Claim Objections

2. Claims 4-7, 9-10, 13-14, 16, & 19 are objected to because of the following informalities:

Claim 4, in Lane 23, the term “for each application” lacks antecedence in this claim or its parent claims.

Claim 5, in Lane 11, the term “for each application” lacks antecedence in this claim.

Claim 9, in Lane 17, the term “for each application” lacks antecedence in this claim or its parent claims.

Claim 13, in Lane 9, the term “for each application” lacks antecedence in this claim.

Claim 14, in Lane 5-6, “wherein is the user-selected bandwidth” does not indicate Ω is the user-selected bandwidth.

Claim 16, in Lane 5-6, “wherein is the user-selected bandwidth” does not indicate Ω is the user-selected bandwidth.

Regarding claims 6, 10, & 13, the phrase “ \leq about 0.0625” renders the claim indefinite because it is unclear whether the limitation ≤ 0.0625 or not. Do not use “about” in the arithmetic relations, it renders the claim indefinite.

Regarding claim 7, 14, & 19, the phrase “ $>$ about 0.0625” renders the claim indefinite because it is unclear whether the limitation > 0.0625 or not. Do not use “about” in the arithmetic relations, it renders the claim indefinite.

Appropriate corrections are required.

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaku et al. (US 5694422) in view of Lane et al. (US 5687104).

Regarding **claim 1**, Kaku et al. discloses a equalizer comprising: a plurality of equalizing filters (Fig.5, column 3 lines 3-10); a data processor (30 Fig.5); a data storage unit for storing filter parameters (31 Fig.5, column 2 lines 20-25, Abstract); and computing means for carrying out filtering computations on the basis of parameters read from the parameter storage, however does not implicitly specify the contents of the parameters and the computation methods. Lane et al. teaches a data input device in communication with the data processor (251-254 FIG.9); a translation function algorithmic software and a softening function algorithmic software (FIG.2 & 7, column 3 lines 43-50, column 4 lines 12-14) implemented. The center frequency, bandwidth and gain data received (104 FIG.2, column 5 lines 19-30, column 1 lines 37-50, column 8 lines 5-10) and stored in the buffer (FIG.9); the timing parameters (e.g. N in column 4 lines 19-22 '104; column 1 Lane 61-column 2 Lane 6 '422) and gain incrementing parameters (e.g. E in column 4 lines 22-37). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the equalizer data processing system taught by Lane et al. implemented in Kaku et al.'s computing means to reduce noise components, compensate for acoustical shortcomings, etc. (column 1 lines 47-58) so the filters can be recharacterized

substantially without audible artifacts and to produce an actual filter response that closely corresponds with the desired filter response (column 3 lines 38-42, column 1 lines 50-58).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaku et al. (US 5694422) in view of Lane et al. (US 5687104) and admitted prior art (Description of the Prior Art).

Regarding **claim 8**, except specify the filter for a cut region and boost region, Kaku et al. discloses all subject matter (refer to the rationale of claim 1). However Description of the Prior Art (page 1 Lane 23-page 2 Lane 9, Figure 1 & 2) discloses an allpass filter having a multiplier dependent upon a predetermined bandwidth and predetermined peak gain for a cut region below 0 dB (equation 3) and further dependent solely upon a predetermined bandwidth for a boost region above 0 dB (equations 1 & 2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the allpass filter in the equalizing filter taught by the admitted prior art in the Kaku et al.'s equalizing filters to provide an improved circuit for an equalizer whose frequency ranges can be adjusted in accordance with the predetermined parameters (page 2 lines 22-25).

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaku et al. (US 5694422) in view of Lane et al. (US 5687104) as applied to claim 1 above, and further in view of admitted prior art (Description of the Prior Art).

Regarding **claim 2**, further Description of the Prior Art (page 1 Lane 23-page 2 Lane 9, Figure 1 & 2) discloses an allpass filter having a multiplier dependent upon a predetermined bandwidth and predetermined peak gain for a cut region below 0 dB (equation 3) and further dependent solely upon a predetermined bandwidth for a boost region above 0 dB (equations 1 &

2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the allpass filter in the equalizing filter taught by the admitted prior art in the Kaku et al.'s equalizing filters to provide an improved circuit for an equalizer whose frequency ranges can be adjusted in accordance with the predetermined parameters (page 2 lines 22-25).

Allowable Subject Matter

7. Claims 3, 11-12, 17-18, 21-22 are allowed.
8. Claims 4-7, 9-10, 13-14, 16, & 19 are objected to informality, but would be allowable if rewritten to overcome the objections.
9. Claims 15 & 20 are objected as being dependent upon objected base claims, but would be allowable if the objected base claims overcome the objections.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

Edith Chang
December 18, 2003


CHIEH M. FAN
PRIMARY EXAMINER